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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,058	03/12/2004	Teck Kheng Lee	2269-5351.1US (02-0239.01)	8448
24247	7590	11/03/2004	EXAMINER DOAN, THERESA T	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			ART UNIT 2814	PAPER NUMBER

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/800,058	Applicant(s) LEE, TECK KHENG	
	Examiner Theresa T Doan	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
 4a) Of the above claim(s) 10-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-9 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/12/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of the invention of claims 10-18 drawn to a process that the reply filed on 10/04/04 is acknowledged. The traversal is on the ground(s) that since the method cited as a "different" method is actually encompassed by the scope of the claimed method and, therefore, the claimed method (claims 10-18) is not patentably distinct from the claimed apparatuses (claims 1-9). This is not found persuasive because Applicant has not provided a convincing argument that the different processes would not be suitable in producing the recited device. It is submitted that the materially different processes would be suitable. The Patent Office is not in a position to demonstrate the effectiveness of the materially different process. Finally the search is not coextensive as evidenced by the different fields of search for the process and product as cited in the restriction mailed 09/02/04.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not

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described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitations of "... wherein the centroid of the bond pad layer is **misaligned** with respect to the centroid of the terminal pad", as recited in claim 7, lines 11-12, is not described in the specification in such a way as to enable one skilled in the art to which it pertains. For the examination purpose, the Examiner assumes that the centroid of the bond pad layer is **aligned** with respect to the centroid of the terminal pad.

Claims 8-9 are also rejected because dependent claims, which are depend on claim 7.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation of "the centroid of the bond pad layer is **misaligned** with respect to the centroid of the terminal pad" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

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and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5 and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Darveaux et al. (U.S. Pat. 6,201,305) of record.

Regarding claim 1, Darveaux (figures 1A-1B) discloses a substrate for an electronic device configured for mounting a discrete conductive element thereon, the substrate comprising:

a sheet of insulative material 12 (column 1, lines 46-49);

a metal layer defining a terminal pad 14 formed on a surface of the sheet 12 (column 1, lines 54-64);

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an insulative mask 20 (column 1, line 61) extending over the sheet 12 and having an aperture therein through which a portion of the terminal pad is exposed; and

a bond pad layer 28 comprising at least another metal layer formed over, at most, a portion of the exposed portion of the terminal pad, the bond pad layer extending up a sidewall of the aperture and over a portion of the insulative mask adjacent to the aperture (column 1, lines 50-67 and column 2, lines 1-8).

Regarding claims 2-4, Darveaux (figures 1A-1B) discloses further comprising a solder ball 24 in electrical contact with both the bond pad layer 28 and the terminal pad 14 wherein the solder ball is attached to a side surface of the bond pad layer and attached to the portion of the bond pad layer extending over the insulative mask (column 2, lines 1-8).

Regarding claim 5, Darveaux (figures 1A-1B) discloses wherein the bond pad layer 28 is configured as radially extending elements generally symmetrically arranged about the terminal pad 14 (column 2, lines 60-66).

Regarding claim 7, Darveaux (figures 1A-1B) discloses a substrate for an electronic device configured for mounting a discrete conductive element thereon, the substrate comprising:

a sheet of insulative material 12;

a metal layer defining a terminal pad 14 formed on a surface of the sheet;

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an insulative mask 20 extending over the sheet and having an aperture therein through which a portion of the terminal pad 14 is exposed, the exposed portion of the terminal pad having a centroid (column 1, lines 61-67); and

a bond pad layer 28 comprising at least a metal layer formed over at least a portion of the exposed portion of the terminal pad 14, extending up a sidewall of the aperture and over a portion of the insulative mask 20 adjacent to the aperture, and having a centroid;

wherein the centroid of the bond pad layer is aligned with respect to the centroid of the terminal pad (column 2, lines 41-59).

Regarding claim 8, Darveaux (figures 1A-1B) discloses wherein the centroid of the bond pad layer 28 is positioned according to a measured lateral position of the aperture in the insulative mask 20 (column 3, lines 25-28).

7. Claims 1-5 and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitchell et al. (U.S. Pat. 5,773,359) of record.

Regarding claim 1, Mitchell (figures 1-3) discloses a substrate for an electronic device configured for mounting a discrete conductive element thereon, the substrate comprising:

a sheet of insulative material (column 4, lines 58-59);

a metal layer defining a terminal pad 23 formed on a surface of the sheet (column 2, lines 15-20);

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an insulative mask 24 (column 2, lines 26-32) extending over the sheet and having an aperture therein through which a portion of the terminal pad is exposed; and a bond pad layer 25 comprising at least another metal layer formed over, at most, a portion of the exposed portion of the terminal pad, the bond pad layer extending up a sidewall of the aperture and over a portion of the insulative mask adjacent to the aperture (column 2, lines 44-57).

Regarding claims 2-4, Mitchell (figures 1-3) discloses further comprising a solder ball 29 in electrical contact with both the bond pad layer 25 and the terminal pad 23 wherein the solder ball is attached to a side surface of the bond pad layer and attached to the portion of the bond pad layer extending over the insulative mask (column 3, lines 20-29).

Regarding claim 5, Mitchell (figures 1-3) discloses wherein the bond pad layer 29 is configured as radially extending elements generally symmetrically arranged about the terminal pad 23.

Regarding claim 7, Mitchell (figures 1-3) discloses a substrate for an electronic device configured for mounting a discrete conductive element thereon, the substrate comprising:

- a sheet of insulative material (column 4, lines 58-59);

- a metal layer defining a terminal pad 23 formed on a surface of the sheet;

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an insulative mask 24 extending over the sheet and having an aperture therein through which a portion of the terminal pad 23 is exposed, the exposed portion of the terminal pad having a centroid; and

a bond pad layer 29 comprising at least a metal layer formed over at least a portion of the exposed portion of the terminal pad 23, extending up a sidewall of the aperture and over a portion of the insulative mask 24 adjacent to the aperture, and having a centroid;

wherein the centroid of the bond pad layer is aligned with respect to the centroid of the terminal pad.

Regarding claim 8, Mitchell (figures 1-3) discloses wherein the centroid of the bond pad layer 29 is positioned according to a measured lateral position of the aperture in the insulative mask 24.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-5 and 7-9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 6,762,503. Although the conflicting claims are not identical, they are not patentably distinct from each other because as follows: both U.S. Patent and instant application claimed a solder ball pad for mounting and connecting of electronic devices. Moreover, the claim 1 in the U.S. No. 6,762,503 is either narrower version of the claims of the instant application or obvious variations thereof. For example, in claim 1 of U.S. No. 6,762,503 “...**at least one electrolessly plated copper layer** formed over at least a portion of the exposed portion of the terminal pad, extending up a sidewall of the aperture and over a portion of the insulative mask adjacent to the apertures...” whereas claim 1 of the instant application claims “...**a bond pad layer comprising at least another metal layer** formed over, at most, a portion of the exposed portion of the terminal pad, the bond pad layer extending up a sidewall of the aperture and over a portion of the insulative mask adjacent to the aperture...”, that shows the limitation claimed (claim 1) of reference U.S. No. 6,762,503 is more narrower than the claims of the instant application. The facts are that the claims of the U. S. Patent No. 6,762,503 and instant application have claimed the same goal and are not distinguished from each other.

Allowable Subject Matter

10. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose all the combination of manufacturing a solder ball pad for mounting and connecting of electronic devices recited in the base claim 1. Specifically, the combination of the structure comprising the bond pad layer comprises a plurality of apertures through which the terminal pad is exposed, as recited in claim 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T Doan whose telephone number is (571) 272-1704. The examiner can normally be reached on Monday to Thursday from 8:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, WAEL FAHMY can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TD
October 28, 2004.



PHAT X. CAO
PRIMARY EXAMINER